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ABSTRACT

This paper examines the relationship between a school's grade configuration and student performance in Louisiana. Student performance was measured by academic achievement (standardized test scores) and student persistence (attendance, suspensions, expulsions, and dropouts). Elementary schools, middle schools, secondary schools, and combination (K-12) schools were examined using grade-level data for grades 6, 7, and 9-12. Also considered were school socioeconomic status (SES) (percentage of students receiving free lunch) and school size (size of the grade-level under consideration). Results indicate that sixth- and seventh-grade students performed better in elementary and K-12 schools than in middle or secondary schools, in terms of both achievement and persistence. Students in K-12 schools performed as well as those in elementary schools overall and performed better in some cases (grade 6 and high poverty). For grades 9-12, the K-12 school was more beneficial to students than the traditional secondary school, particularly in the area of student persistence or conduct. With regard to academic achievement, secondary schools did not differ significantly from K-12 schools regardless of school size or SES. School size did appear to impact 11th- and 12th-grade student persistence more within the secondary school environment than that of the K-12 school. Contains 34 references and 29 data tables and figures. (Author/SV)

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The Relationship Between Grade Configuration and Student Performance in Rural Schools

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Running Head: GRADE CONFIGURATION AND STUDENT PERFORMANCE

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Abstract

The purpose of this study was to examine the relationship between grade configuration (i.e., the sequence of grades in a school) and student performance. School size and SES levels were included to account for possible interactions. Student performance was measured through two perspectives—academic achievement (test scores) and student persistence (attendance, suspensions, expulsions, and dropouts). Elementary, middle, secondary, and combination (K-12) schools were examined using grade-level data for six grades—six, seven, and nine through twelve. The upper grades showed significant differences relative to student persistence while the lower grades demonstrated differences in both areas (achievement and persistence) using MANOVA. Students in elementary and combination schools outperformed their middle and secondary school peers. A SES by configuration interaction was noted for grade six and a size by configuration interaction was identified for grades 11 and 12.

The Relationship Between Grade Configuration and Student Performance in Rural Schools

Public education, especially rural education, originated from small one-room, ungraded schools. The concept of graded schools was not introduced until the mid-1800's in the Boston Schools and rapidly spread across the Country. Since the graded school required a larger student body and faculty, this concept became a reality first in the larger towns and then later in the less densely populated rural areas. It was not until the advent of the high school that public education evolved into a continuous program from elementary schools through high schools (Callahan, 1960).

Much of what has happened with regards to school grade structure can be attributed to the development of the middle school. Superintendent Frank Forest Bunker is generally given credit for proposing and establishing the first developed middle school in Berkeley, California in 1909. His organizational plan called for the reorganization of that city's school system to a 6-3-3 structural pattern in which grades 7, 8, and 9 were to be housed separately (Cited in Popper, 1967). During this time period, many came to believe that the three tiered grade structure was physiologically, psychologically, sociologically, and logically correct (J. H. Francis cited in Popper, 1967). Clearly these early middle school advocates were concerned about the well being of their early adolescent students. During the early years of existence, beneficial gains were often noted by these middle school advocates encouraging the continued proliferation of the tiered grade structure.

Theory

Educators have failed to reach a consensus on which grade configuration offers the best educational opportunities to students. The American education system is not only attuned to the particular age and grade groupings, but it also operates as a continuous system from kindergarten through the 12th grade. An examination of school grade structure must specifically include the creation of the middle or junior high school (Carnegie Council, 1989). Attempts to address the perceived needs of the pre-adolescent has impacted both elementary and secondary schools and resulted in various changes in grade patterns.

Much of the concern regarding grade arrangements centers around the developmental levels and emotional needs of the various mixtures of students (NASSP, 1959; NASSP, 1962; NASSP, 1967). Alexander and Kealy (1969) and Alexander(1971) justified the existence of the middle school as a program geared to the needs of early adolescents and sought to reorganized the entire educational system in order to promote continuity in schooling. Their push was to replace the junior high by moving grade nine up to the high school and bringing in grades five and six to the middle school.

The lack of organizational consistency among various types of schools confuse the issue concerning which type of grade arrangement provides the best combination for students. Throughout the twentieth century, schools have been formed with any number of different grade combinations. Many school systems developed their own organizations in response to educational theory, administrative needs, or population pressures (Organization of the Middle Schools, 1983). Alexander and Kealy (1969) and Valentine (Cited in Hough, 1991) explained the variation of grade patterns among middle schools as methods "to alleviate current

administrative problems including crowded conditions in other school organizations and the need to desegregate school systems (p. 152). The reverse has also been noted in areas where declines in enrollment have resulted in the merger of elementary and middle into the K-8 elementary school arrangement (Organization of the Middle Schools, 1983).

Literature Review

Clearly, policy makers give little credence to the importance of grade configuration. This is obvious from the various assortments of grade structures that exist in school districts across the United States. As an example, Louisiana currently has 64 different grade configurations within its K-12 public education system. Current interest in this area appears to have declined within the research community as evidenced by the scarcity of recent papers and reports that can be found on this subject. Except for the Wihry, Coladarci, and Meadow (1992) study, the most recent research on grade configuration is eight to ten years old. Wihry, Coldarci, and Meadow (1992) state that, "... little evidence bearing on the relationship between grade organization and academic achievement" (p. 58) exists.

One of the earliest studies of school configuration was conducted by Stetson (1917) in the early 1900s. He examined the cost effectiveness of the Grand Rapids, Michigan, junior high school and concluded that the increased administrative cost of the separate school produced no improvement in student achievement over the elementary school. Other research efforts conducted during the 1920s showed students in elementary settings performing slightly better than their junior high peers (Organization of the Middle Schools, 1983). Numerous studies continued to be conducted from the 1920s through the 1960s. In general, it can be concluded that the results were inconclusive. No major differences were found between elementary and

junior high peers relative to academic and social development (Organization of the Middle Schools, 1983).

Most of the research since the 1960s also relates to effects on early adolescents (Blyth, Simmons, & Bush, 1978; Blyth, Hill, & Smyth, 1981; Safer, 1986; Wihry et al., 1992). While grade configuration research exists for middle/junior high schools, research concerning the secondary grades (9-12) is practically nonexistent (see Cotterell, 1982; Heaton & Safer, 1982; Nisbet & Entwistle, 1969) and the literature appears to be completely void of research involving K-12 school structures.

The environment created by a school's grade structure may affect student attitudes (Blyth et al., 1981) and social adjustment (Wihry et al., 1992). The fragmentation of schools (i.e., moving from K-12 graded schools to another division such as 7-3-3 or 8-4) changes the ability of the educational organization to maintain a core population over long periods and thus affects the social structure of schools. A 7-3-3 refers to a system in which there are three schools, a K-6, 7-9, and 10-12. McPartland, Coldiron, & Braddock (1987) found greater continuity and similarity among different grades with the same school than the same grade levels between schools.

> There can be little doubt that the school environment and the activities that take place within it are some major dimensions of a youth's life and play a critical role in his or her socialization. To the extent that the school environment changes one would expect corresponding changes in socialization patterns. (Blyth, Simmons, & Bush, 1978, p. 150)

McPartland, Coldiron, & Braddock (1987) found grade levels in a school to be a strong predictor of a school's practices. The highest grades tended to influence practices at the lower grades. They concluded that the higher the grade the less likely that each grade would be self-contained, blocked scheduled, and grouped within the class. They also indicated that the higher grades increased the chance that the school would be departmentalized and students would be tracked by subject or program.

Grade segregated schools are often created in an effort to make education cost effective ; however, it is not cost effective when an organization does not achieve stated goals (Silberman, 1970). The goal of education is to assist children in growth, both academically and socially, not to manage buildings and people at the lowest cost.

The literature is replete with examples of how such things as school and district size and SES affect student and staff performance and the social learning environment. States with large districts and schools generally have the lowest achievement scores (Walberg & Walberg, 1994). Consolidation efforts create many of these large systems in the name of increased administrative efficiency and lower overall costs (Alexander and Kealy, 1969; Organization of the Middle School, 1983). Sergiovanni (1995) indicates that small schools benefit the learning environment and offer economic advantages as well. There also is evidence that small schools can be cost effective in the urban setting and are more beneficial than large schools across a variety of grade configurations (Sergiovanni, 1995).

One result of earlier efforts of restructuring is the increase in the number of middle/junior high schools. It is generally accepted that a separate facility would better serve the special needs

of this age group. Cowen (1991) points out that the emphasis with early adolescents focuses mostly on treatment of existing factors rather than prevention.

Anderman and Maehr (1994) find that "...few reform efforts have emerged which consider the motivational and developmental needs of youth" (p. 289). They suggest that reform "must consider the multiple contexts in which students interact" (p. 289). Anderman and Maehr (1994) suggest "developmental changes that occur at early adolescence are attributable to grade-related changes in the structure of the school.." (p. 289). Haladyna and Thomas (1979) demonstrate that student attitude toward school, specifically mathematics, science and art, decreases with the student's age. Many argue that adolescence alone brings on these changes, but Eccles & Midgley (1989) and Simmons & Blyth (1987) report that contextual and environmental factors play a role as well. Simmons et. al (1987) find that females moving into the middle/junior high school suffer from a drop in self-esteem which does not occur in females remaining in a K-8 structure; further, this lowering of self-esteem continues as females enter high school. In a study of Louisiana public school suspensions and expulsions, Kennedy (1993) has shown that "school grade configuration plays a role in the variations among schools for both indicators" (p. 8). Silberman (1970) states that adolescents are "harder to control than younger children and secondary schools tend to be even more authoritarian and repressive than elementary schools: the value they transmit are the values of docility, passivity, conformity, and lack of trust" (p. 324).

Purpose

This paper presents empirical findings on the relationship between a school's grade configuration, student achievement, and persistence in grades six through twelve. Anecdotal

evidence suggests that a school's grade configuration is of minor significance when financial and administrative decisions are made about how schools are structured in a district. Achieving a good (or best) learning environment does not appear to play a role in making these decisions.

Although resistant to change, the graded school has undergone several modifications. Most of this interest centers around the needs of the early adolescent (Carnegie Council, 1989). Restructuring efforts have produced an increase in the number of middle/junior high schools under the premise that a separate facility will better serve the special needs of this age group. The segregation of early adolescents has simultaneously created elementary and secondary schools. Wihry, Coladarci, and Meadow (1992) and Blyth, Hill, and Smyth (1981) call for additional research to ascertain by empirical means the effectiveness of a school's grade structure. The present research attempts to address this need.

Method

This research is an exploration of several variables that represent academic and social indicators which may demonstrate whether one grade configuration offers significantly better conditions for the learning environment over another. Specifically examined are the academic performance and persistence indicators of students as they relate to school grade structure for grades six through twelve in Louisiana public schools.

In this research, school configuration is defined as a set of grade levels housed within a specific school. Schools are categorized as elementary, middle/junior high, secondary or combination: elementary schools teach students in grades K-6/7, middle/junior high schools teach students in grades 6/7-8/9, secondary schools teach students in grades 7/9-12 and combination schools teach students in grades K-12.

The Louisiana Department of Education currently carries five different classifications of community types—metropolitan, urban fringe, city, town, rural. How a school is classified is left to the school principal to determine, therefore the accuracy of these terms is questionable. Analyzes of school-level data indicate no significant differences between city, town and rural schools. This, coupled with the fact that nearly three quarters of Louisiana can be considered rural and that many of the city and town schools contain students bussed in from rural areas, is justification for including city and town schools in with rural.

To determine if significant differences exist between the school categories, different grade levels are analyzed. Indicators examined are attendance, suspension, expulsion, dropouts, Criterion-Referenced Test (CRT) scores, Norm-Referenced Test (NRT) scores and ACT scores.

Using the MANOVA procedure, this study assesses the effects of grade configuration on student achievement and student persistence for grades 6-12. Student persistence is defined here as those activities that indicate the holding power of a school. Persistence indicators are attendance, suspensions, expulsions, and dropouts. Achievement is represented through state and national tests. Since the main focus of this study is school configuration, MANOVA results are not analyzed for significant main effects with size and SES. Simple effects are identified for any interaction that occurs.

Sample

These data represent information collected during the 1992-93 school year from all Louisiana public schools. Attendance, suspension, expulsion, dropout, and test data are compared for grades 6-12. School configuration, size, and socio-economic status (SES) are the grouping variables placed into the MANOVA model.

There are 78 schools that have the grade structure of K-12 and are classified as combination schools. In some cases this group is left intact. The grade six sample contains 234 schools—78 elementary, 78 middle, and 78 combination. The elementary and middle school groups were larger than 78 so a random sampling process was used to create a similar size sample for statistical comparisons. For grade seven, four distinct school configurations were created—elementary, middle, secondary, and combination. The secondary group (grades 7-12) was left intact (n=39) and random samples were selected for elementary (n=40), middle (n=39), and combination (n=38) school groups. This created a total sample size of 156.

Schools that contained grades nine through twelve were divided into two groups, combination and secondary (grades 9-12). Seventy-seven of the combination schools were used in this portion of the study. One school was eliminated because of missing data. A random sample of 76 secondary schools was chosen as the comparative group making a total sample size of 153 schools.

School Size

The schools in this study are divided into three equal sized groups based on their end-of-year membership. The point of division varied with changes in samples. Size 1 schools are those schools with less than 349 students for the grade six sample, 344 students for the grade seven sample, and 372 students for the 9-12 sample. Size 2 schools are between 449 and 503 students for the grade six sample, 344-473 for the grade seven sample, and 552-372 students for the 9-12 sample. The Size 3 schools are those with student memberships at or above 503 for the grade six sample, 473 for the grade seven sample, and 552 for the 9-12 sample of schools. School categorization by size was used to identify any interactions that might exist.

School Socio-economic Status

The percent of the student population that qualifies for free lunch was used as the socio-economic status (SES) of the student population. The sample schools were divided into three equal sized groups based on the percentage of their population on free lunch. As with size, the SES divisions vary with each sample. Poverty 1 schools are those in which less than 44 % (grade six), 40% (grade seven), and 36% (grades 9-12) of the students qualify for free lunch status. Poverty 2 schools are those with 44-65% (grade 6), 40-62% (grade seven), and 36-49% (grades 9-12) of their students on free lunch. The third SES group, Poverty 3, has a percentage of their students identified as free lunch recipients at or above 65% (grade six), 62% (grade seven), and 49% (grades 9-12). Again, this grouping variable was used to identify any interactions that might exist. Past studies show that the outcomes from high poverty schools may be related to the size of the school (Franklin, Caldas, Crone, Ducote, & Killebrew, 1993). Therefore, it is necessary to consider what relationship, if any, size and SES might have with grade configuration.

Results

Grade Six

Grade six results were analyzed using three-way MANOVA, with three between group factors. This analysis revealed a significant school configuration by SES interaction ($p<.0046$). See Table 1 for specific results.

Insert Table 1 about here

Subsequent analyses of grade six attendance demonstrated that there was a simple effect for configuration at two of three poverty levels (See Table 2 and Figure 1.). For the Poverty 1 schools (<44% free lunch), configuration proved to be nonsignificant, $F(2, 224) = 2.66$, $p<.05$. Within Poverty 2 schools (44%-65% free lunch) elementary schools displayed higher attendance than middle schools, $F(2, 224) = 6.77$, $p<.01$. While combination schools also showed higher attendance than middle schools, the difference was not significant (Figure 1, $p<.05$). Combination and elementary schools displayed higher attendance than did middle schools in the Poverty 3 (>65% free lunch) group, $F(2, 224) = 18.34$, $p<.001$.

Insert Table 2 about here

Insert Figure 1 about here

Analyses of grade six suspensions displayed a simple effect for configuration at three poverty levels (Table 3 and Figure 2). Middle schools displayed higher suspensions than either combination or elementary schools in the Poverty 1, $F(2, 224) = 5.51$, $p<.01$, and Poverty 2 groups, $F(2, 224) = 8.59$, $p<.001$. For Poverty 3 schools, suspensions were higher for middle schools than for elementary schools, $F(2, 224) = 5.61$, $p<.01$. Whereas middle schools demonstrated higher suspensions than combination schools, the difference was nonsignificant ($p<.05$).

Insert Table 3 about here

Insert Figure 2 about here

Grade six expulsion analyses also showed a simple effect. Middle schools displayed higher expulsions than either combination or elementary schools in both Poverty 2, $F(2,224) = 4.51$, $p<.05$ and Poverty 3 groups, $F(2, 224) = 15.14$, $p<.001$. The simple effect for configuration at poverty level one proved to be nonsignificant (See Table 4 and Figure 3.).

Insert Table 4 about here

Insert Figure 3 about here

Further examination of NRT scores (Table 5 and Figure 4) revealed simple effects for two of the three poverty groups. Elementary schools scored higher than middle schools in both Poverty 1, $F(2, 223) = 3.49$, $p<.05$, and Poverty 2 groups, $F(2, 223) = 11.34$, $p<.001$. The combination school scores were significantly different from middle schools in only the Poverty 2 group. Although elementary and combination schools scored higher than middle schools, the simple effect for configuration at poverty level three proved to be nonsignificant, $F(2, 223) = 2.58$, $p<.05$.

Insert Table 5 about here

Insert Figure 4 about here

Grade Seven

Grade seven results were analyzed using three-way MANOVA, with three between group factors. This analysis revealed a significant multivariate effect for school configuration ($p<.0001$) and SES ($p<.0064$) and failed to reveal a significant multivariate effect for size or any interaction. See Table 6 for specific results.

Insert Table 6 about here

School configuration was further analyzed using three-way ANOVA. For school configuration, this analysis revealed a significant ($p<.05$) main effect with the dependent variables attendance, expulsions, language arts, and mathematics and a nonsignificant ($p<.05$) effect with suspensions (Table 7). Grade seven students in elementary schools demonstrated the highest attendance followed by combination, middle/junior high, and secondary schools respectively. Only the elementary and secondary schools were significantly different, $F(3,121) = 2.47$, $p.06$.

Insert Table 7 about here

Although the combination and elementary schools showed lower suspensions than either the middle or secondary schools groups, the difference was not significant ($p<.05$). Expulsions for middle and secondary school seventh graders were approximately five times (See Table 7, $p<.05$) higher than their counterparts in combination and elementary schools. Test score analysis shows elementary schools with the highest level of performance followed by combination, middle, and secondary schools respectively ($p<.05$).

Grades Nine -Twelve

Grade nine results were analyzed using three-way MANOVA, with three between group factors. This analysis revealed a significant multivariate effect for school configuration ($p<.001$) and SES ($p<.0473$) and failed to reveal a significant multivariate effect for size or any interaction. See Table 8 for specific results.

Insert Table 8 about here

School configuration and SES were further analyzed using three-way ANOVA. For school configuration, this analysis revealed a significant main effect ($p<.05$) with the dependent variables attendance, suspensions, and expulsions and a nonsignificant effect with dropouts ($p<.05$). Combination schools outperformed secondary schools in all four areas (Table 9).

Insert Table 9 about here

Grade ten results were analyzed using three-way MANOVA, with three between group factors. This analysis revealed a significant multivariate effect for school configuration ($p<.0001$) and SES ($p<.0349$) and failed to reveal a significant multivariate effect for size or any interaction. See Table 10 for specific results.

Insert Table 10 about here

School configuration and SES were further analyzed using three-way ANOVA. For school configuration, this analysis revealed a significant main effect ($p<.05$) with the dependent variables attendance, suspensions, and expulsions (Table 11). The effect with dropouts,

language arts, mathematics, and writing was not significant ($p<.05$). In all areas except writing, tenth grade students in combination schools scored higher their secondary school counterparts (Table 11).

Grade eleven results were analyzed using three-way MANOVA, with three between group factors. This analysis showed a significant multivariate effect for the school configuration by size interaction ($p<.0040$). See Table 12 for specific results.

Insert Table 12 about here

Subsequent analyses of grade eleven attendance demonstrates that there was a simple effect for configuration at two of three size levels (See Table 13 and Figure 5.). For the Size 1 schools (<372 students), configuration proved to be significant, $F(1,104) = 3.12$, $p<.1$ with combination schools averaging 1.5% higher attendance than secondary schools (Figure 5). Within Size 2 schools (372-552 students) the average attendance was approximately the same for both configurations yielding a nonsignificant difference, $F(1, 104) = 0.01$, $p<.05$. Combination schools averaged 2% higher attendance than did secondary schools in the Size 3 (>552 students) group, $F(1, 104) = 5.77$, $p<.05$.

Insert Table 13 about here

Insert Figure 5 about here

Analyses of grade eleven suspensions displayed a simple effect for configuration at one size level (Figure 6). Although suspensions were higher among secondary schools than

combination schools for all three size groups, only Size 2 schools showed a significant difference $F(1, 104) = 10.30$, $p<.05$ (Table 14).

Insert Table 14 about here

Insert Figure 6 about here

Grade eleven dropout analyses also showed a simple effect (Table 15, Figure 7). Combination schools displayed slightly higher dropouts than secondary schools in both Size 1 and Size 2 groups, but were not significantly different ($p<.05$) . The simple effect for configuration at size level three proved to be significant $F(1, 104) = 3.83$, $p<.1$ (Table 15 and Figure 7) with secondary schools showing 2.6 percent more dropouts that combination schools. No simple effects were identified for expulsions or test scores.

Insert Table 15 about here

Insert Figure 7 about here

Grade twelve results were analyzed using three-way MANOVA, with three between group factors. This analysis revealed a significant multivariate effect for the school configuration by size interaction ($p<.0349$). See Table 16 for specific results.

Insert Table 16 about here

Subsequent analyses of grade twelve attendance demonstrated that there was a simple effect for configuration at one of three size levels (See Table 17 and Figure 8.). For the Size 1 (<372 students) and Size 2 (372-552 students) schools, attendance differed 0.7 percent and 0.2 respectively (Figure 8) and the differences were not significant ($p<.05$). Combination schools averaged 2% higher attendance than secondary schools in the Size 3 (>552 students) group, $F(1, 104) = 4.39$, $p<.05$.

Insert Table 17 about here

Insert Figure 8 about here

Analyses of grade twelve suspensions displayed a simple effect for configuration at one size level (Table 18, Figure 9). For the Size 1 group, secondary schools showed lower suspensions, however, the difference was not significant ($p<.05$). Combination schools demonstrated lower suspensions for the Size 2 and Size 3 groups. The difference was significant for the Size 2 schools, $F(1, 104) = 4.47$, $p<.05$, but not significant ($p<.05$) for Size 3 (Table 18).

Insert Table 18 about here

Insert Figure 9 about here

Grade twelve expulsion analyses also showed a simple effect (Table 19, Figure 10). Combination schools displayed higher expulsions than secondary schools in both Size 1 and Size 3 groups, but only the simple effect for configuration at size level three proved to be significant $F(1, 104) = 7.50$, $p<.1$ (Table 19, Figure 10). No simple effects were identified for grade twelve dropouts or ACT scores.

Insert Table 19 about here

Insert Figure 10 about here

Conclusions

Grades Six and Seven

Academically, sixth and seventh grade students performed better in elementary and combination schools than in middle or secondary schools. On the California Achievement Test (CAT) for grade six, the elementary and combination school mean scores ranged from seven to 10 points higher in their scores than middle school students. For the seventh grade CRT test, elementary and combination school students scored 16 to 34 points higher than middle school students and 27 to 45 points higher than secondary school students in Language Arts. On the Mathematics portion of the LEAP test, middle schools were outscored by 24 to 54 points and secondary schools by 33 to 63 points. The examination of social indicators showed elementary and combination schools to have lower incidences of suspensions and expulsions and higher student attendance.

From this study it appears that elementary and combination school learning environments are more beneficial to students than either the middle or secondary school learning environments. This is true both for academic performance as well as for student persistence. Student persistence, an indication of time in school, is reflected in all four social indicators, attendance, suspensions, expulsions and dropouts. Combination schools performed as well as elementary schools and in some cases better (e.g., high poverty). However, having separate elementary schools necessitates fragmenting the school community and provides the least beneficial environment for students.

The creation of separate middle or secondary schools should be guided by the needs of the students they are designed to serve. These needs exist regardless of where students are housed. This study indicates that among Louisiana schools the combination (K-12) environment is one which best provides for early adolescent needs or at worst does not further complicate their situation. In addition, grade-segregated schools (i.e., elementary, middle, secondary) may be sacrificing a certain segment of the student population for purely administrative reasons (e.g., saving money or space) which is diametrically opposed to the goals of education. Specifically, the combination school appears to have positive effects on the academic performance of students in grades six and seven, whereas middle and secondary schools have a detrimental effect on the same grade levels. It is time to forsake the grade fragmentation approach to school structure and return to a community approach to schools, not only in rural schools but urban as well as Sergiovanni (1995) states.

Grades Nine-Twelve

This research also demonstrates that combination school learning environments are more beneficial to students than the traditional secondary school. This is especially true in the area of student persistence or conduct. With regard to scholastic performance (i.e., test scores), secondary schools showed no distinct advantage over combination schools regardless of school size or SES level. School size *does* appear to impact student behavior more within the secondary school environment that of the combination school. Secondary schools like middle schools may be sacrificing a certain segment of the student population for reasons other than those that have a positive impact on learning. It appears that while student difficulties may decrease somewhat with age, it is obvious that many children are affected when forced to change schools .

As with the middle school portion of this study, we believe the combination environment to be more conducive to learning than the secondary school environment. Specifically, combination schools appears to have positive effects on student persistence in grades 9-12; whereas, secondary schools appear to have a less-than-desirable effect for the same grade levels. Additional research is needed to identify other grade configuration differences that may exist. It is the authors intent to replicate this study using student level data to provide a closer examination of the relationships that may exist among school configuration, SES, race, and gender with respect to student persistence and achievement.

Implications

Regardless of the grade structure adopted by local school boards, the developmental, social, and emotional needs of the students should be given priority over fiscal and physical demands. The grade structure of a school is important as it established the basic context for the

learning environment. We propose that small K-12 schools have much to offer in the way of social and academic development and should be given careful consideration by school administrators engaged in restructuring activities. With regards to middle school development, in Louisiana middle schools appear to exist in name only and much is yet to be done regarding middle school reformation.

> More methodologically sound research in needed, however, to understand the relationship between grade span organization (alone or in conjunction with other factors) and school programs and educational outcomes. While grade organization may well be indirectly related to curriculum and directly related to staffing and policy, the optimal configuration cannot be determined until consensus is reached on what type of educational program is most beneficial. Until then, the organizational issue will most probably rest in the conventional wisdom of decision makers and remain a function of personal preference, community needs, and economic necessity. (Hough, 1991, p.26)

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Table 1

MANOVA Results of the Relationship between School Configuration, SES, and Size for Grade Six Students

Source	Wilk's lambda	F(df)	p
Config	.74	8.33(8, 404)	.0001
SES	.65	12.37(8, 404)	.0001
Size	.94	1.61(8, 404)	.1209
Config x SES	.84	2.19(16, 618)	.0046
Config x Size	.92	1.12(16, 618)	.3286
SES x Size	.91	1.16(16, 618)	.2917
Config x SES x Size	.87	.91(32, 747)	.6090

Note. N=232

Table 2

ANOVA Grade 6 Simple Effects for the Interaction of School Configuration by SES for the Variable Percent Attendance

SES Levels	MS	Within Groups MS	F(2, 224)
Poverty 1	7.24	2.72	2.66
Poverty 2	18.41	2.72	6.77*
Poverty 3	49.89	2.72	18.34**

Note. N=232

*p<.01. **p<.001.

Table 3

ANOVA Grade 6 Simple Effects for the Interaction of School Configuration by SES for the Variable Percent Suspensions

SES Levels	MS	Within Groups MS	F(2, 224)
Poverty 1	411.65	74.74	5.51*
Poverty 2	642.17	74.74	8.59**
Poverty 3	419.47	74.74	5.61*

Note. N=232

*p<.01. **p<.001.

Table 4

ANOVA Grade 6 Simple Effects for the Interaction of School Configuration by SES for the Variable Percent Expulsions

SES Levels	MS	Within Groups MS	F(2, 224)
Poverty 1	.79	.74	1.07
Poverty 2	3.34	.74	4.51*
Poverty 3	11.20	.74	15.14**

Note. N=232

*p<.05. **p<.001.

Table 5

ANOVA Grade 6 Simple Effects for the Interaction of School Configuration by SES for the Variable NRT Score

SES Levels	MS	Within Groups MS	F(2, 223)
Poverty 1	701.27	201.2	3.49*
Poverty 2	2280.98	201.2	11.34**
Poverty 3	519.84	201.2	2.58

Note. N=232

*p<.05. **p<.001.

Table 6

MANOVA Results of the Relationship between School Configuration, SES, and Size for Grade Seven Students

Source	Wilk's lambda	F(df)	p
Config	.62	4.02(15, 323)	.0001
SES	.81	2.54(10, 234)	.0064
Size	.91	1.16(10, 234)	.3209
Config x SES	.83	.72(20, 470)	.8591
Config x Size	.82	.78(20, 470)	.7966
SES x Size	.89	.69(20, 389)	.8372
Config x SES x Size	.64	.98(55, 545)	.5146

Note. N=156

Table 7

Grade Seven Means for Subjects in Combination, Elementary, Middle/Jr. High and Secondary School Configurations

School Configuration	N	Attendance	Suspensions	Expulsions	Language Arts	Mathematics
Combination	38	93.98	12.31	$.18_{ac}$	660_{a}	544_{ab}
Elementary	40	94.74_{a}	12.40	$.21_{bd}$	678_{bc}	574_{bcd}
Middle/Jr.	39	93.30	15.67	1.01_{cd}	644_{b}	520_{c}
High Secondary	39	92.21_{a}	19.38	1.13_{ab}	633_{ac}	511_{ad}

Note. Comparisons significant at $p<.05$ (Tukey's Studentized Range) are indicated with the same subscript.

Table 8

MANOVA Results of the Relationship between School Configuration, SES, and Size for Grade Nine Students

Source	Wilk's lambda	F(df)	p
Config	.81	7.52(4, 131)	.0001
SES	.89	2.00(8, 262)	.0473
Size	.96	.72(8, 262)	.6732
Config x SES	.96	.93(8, 262)	.4927
Config x Size	.93	1.14(8, 262)	.3357
SES x Size	.89	.94(16, 400)	.5208
Config x SES x Size	.88	1.07(16, 400)	.3833

Note. N=152

Table 9

Grade Nine Means for Subjects in Combination and Secondary School Configurations

School Configuration	N	Attendance	Suspensions	Expulsions	Dropouts
Combination	77	93.38_a	12.41_a	$.29_a$	3.06
Secondary	75	91.44_a	18.86_a	$.89_a$	3.44

Note. Comparisons significant at $p<.05$ (Tukey's Studentized Range) are indicated with the same subscript.

Table 10

MANOVA Results of the Relationship between School Configuration, SES, and Size for Grade Ten Students

Source	Wilk's lambda	F(df)	p
Config	.79	5.02(7, 129)	.0001
SES	.83	1.83(14, 258)	.0349
Size	.91	.93(14, 258)	.5320
Config x SES	.90	.97(14, 258)	.4885
Config x Size	.88	1.18(14, 258)	.2928
SES x Size	.81	.98(28, 466)	.5021
Config x SES x Size	.76	1.31(28, 466)	.1364

Note. N=153

Table 11

Grade Ten Means for Subjects in Combination and Secondary School Configurations

School Configuration	N	Attendance	Suspensions	Expulsions	Dropouts	Language Arts	Mathematics	Writing
Combination	77	93.81_a	10.91_a	$.02_a$	2.44	52.21	53.03	52.43
Secondary	76	92.16_a	14.73_a	$.40_a$	2.61	51.98	52.38	52.50

Note. Comparisons significant at $p<.05$ (Tukey's Studentized Range) are indicated with the same subscript.

Table 12

MANOVA Results of the Relationship between School Configuration, SES, and Size for Grade Eleven Students

Source	Wilk's lambda	F(df)	p
Config	.92	1.80(6, 130)	.1037
SES	.90	1.22(12, 260)	.2659
Size	.92	.93(12, 260)	.5175
Config x SES	.90	1.20(12, 260)	.2833
Config x Size	.80	2.51(12, 260)	.0040
SES x Size	.84	.91(24, 454)	.5821
Config x SES x Size	.81	1.16(24, 454)	.2719

Note. N=153

Table 13

ANOVA Grade 11 Simple Effects for the Interaction of School Configuration by Size for the Variable Percent Attendance

Size Levels	MS	Within Groups MS	F(1, 104)
Size 1	18.06	5.78	3.12*
Size 2	0.03	5.78	0.01
Size 3	33.34	5.78	5.77**

Note. N=110

*p<.1. **p<.05.

Table 14

ANOVA Grade 11 Simple Effects for the Interaction of School Configuration by Size for the Variable Percent Suspensions

Size Levels	MS	Within Groups MS	F(1, 104)
Size 1	37.96	73.28	2.01
Size 2	754.73	73.28	10.30*
Size 3	43.61	73.28	0.60

Note. N=110

*p<.05.

Table 15

ANOVA Grade 11 Simple Effects for the Interaction of School Configuration by Size for the Variable Percent Dropouts

Size Levels	MS	Within Groups MS	F(1, 104)
Size 1	5.49	11.42	0.48
Size 2	13.73	11.42	1.20
Size 3	43.76	11.42	3.83*

Note. N=110

*p<.1.

Table 16

MANOVA Results of the Relationship between School Configuration, SES, and Size for Grade Twelve Students

Source	Wilk's lambda	F(df)	p
Config	.91	2.29(5, 121)	.0500
SES	.88	1.58(10, 242)	.1121
Size	.90	1.27(10, 242)	.2464
Config x SES	.92	1.00(10, 242)	.4455
Config x Size	.85	1.99(10, 242)	.0349
SES x Size	.81	1.29(20, 402)	.1840
Config x SES x Size	.85	1.04(20, 402)	.4111

Note. N=153

Table 17

ANOVA Grade 12 Simple Effects for the Interaction of School Configuration by Size for the Variable Percent Attendance

Size Levels	MS	Within Groups MS	F(1, 104)
Size 1	3.92	6.35	0.62
Size 2	1.97	6.35	0.31
Size 3	27.85	6.35	4.39*

Note. N=110.

*$p<.05$.

Table 18

ANOVA Grade 12 Simple Effects for the Interaction of School Configuration by Size for the Variable Percent Suspensions

Size Levels	MS	Within Groups MS	F(1, 104)
Size 1	84.60	70.67	1.20
Size 2	316.17	70.67	4.47*
Size 3	110.03	70.67	1.56

Note. N=110

*p<.05.

Table 19

ANOVA Grade 12 Simple Effects for the Interaction of School Configuration by Size for the Variable Percent Expulsions

Size Levels	MS	Within Groups MS	F(1, 104)
Size 1	0.03	0.02	1.5
Size 2	0	0.02	0
Size 3	0.15	0.02	7.5*

Note. N=110

*p<.05.

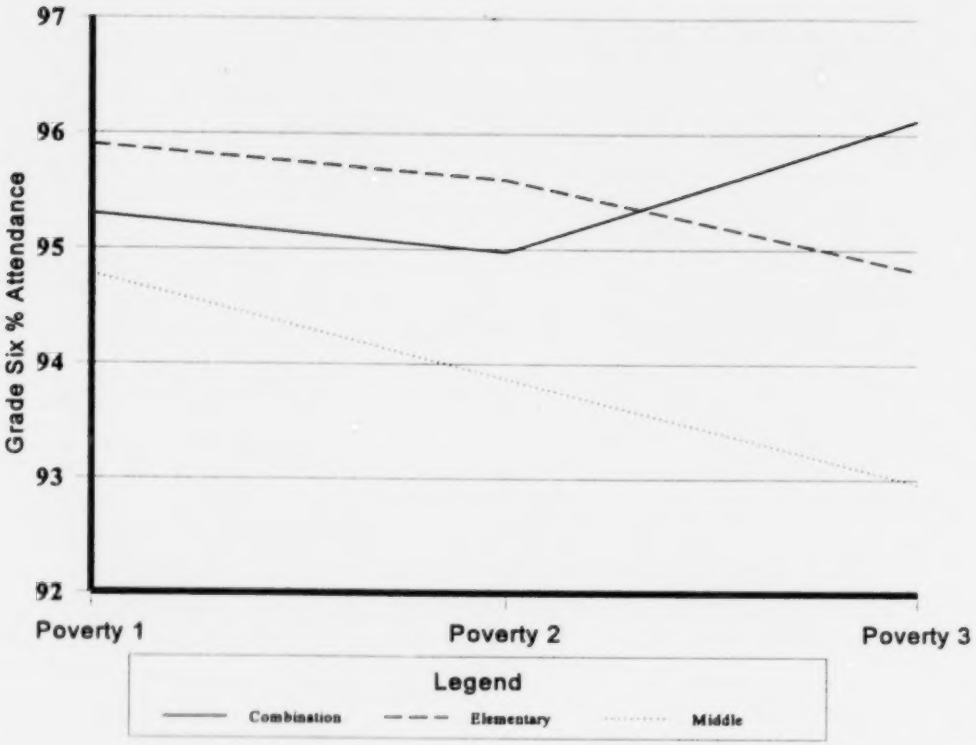

Figure 1. This graph shows the grade six interaction of school configuration and SES for the variable Percent Attendance.

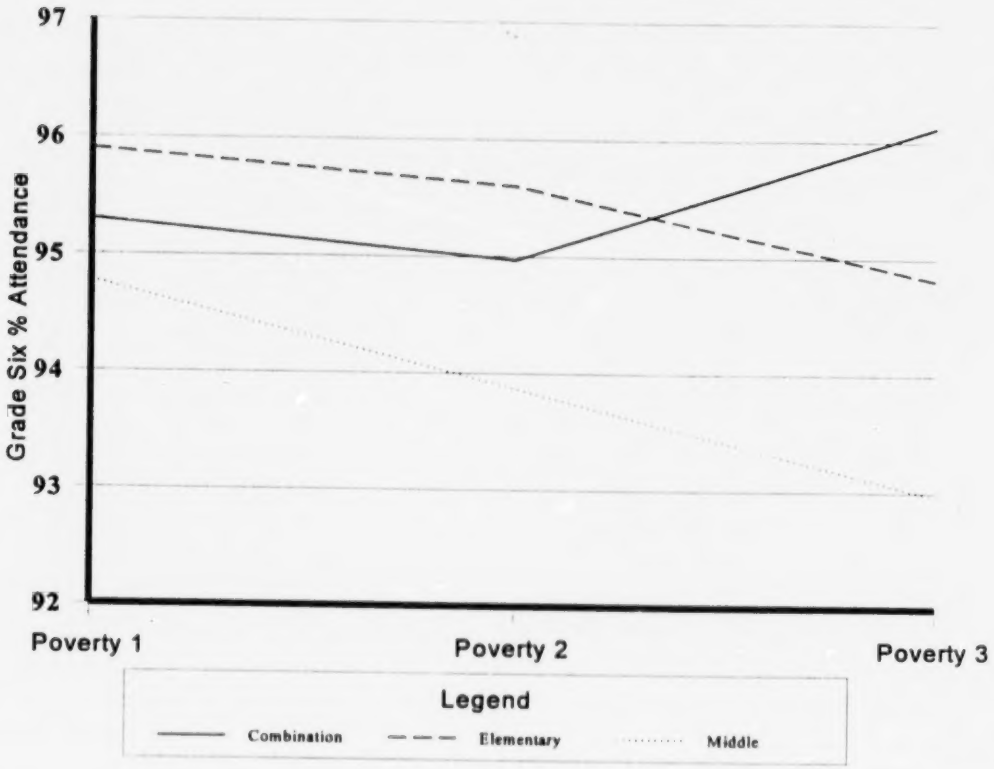

Figure 2. This graph shows the grade six interaction of school configuration and SES for the variable Percent Suspensions.

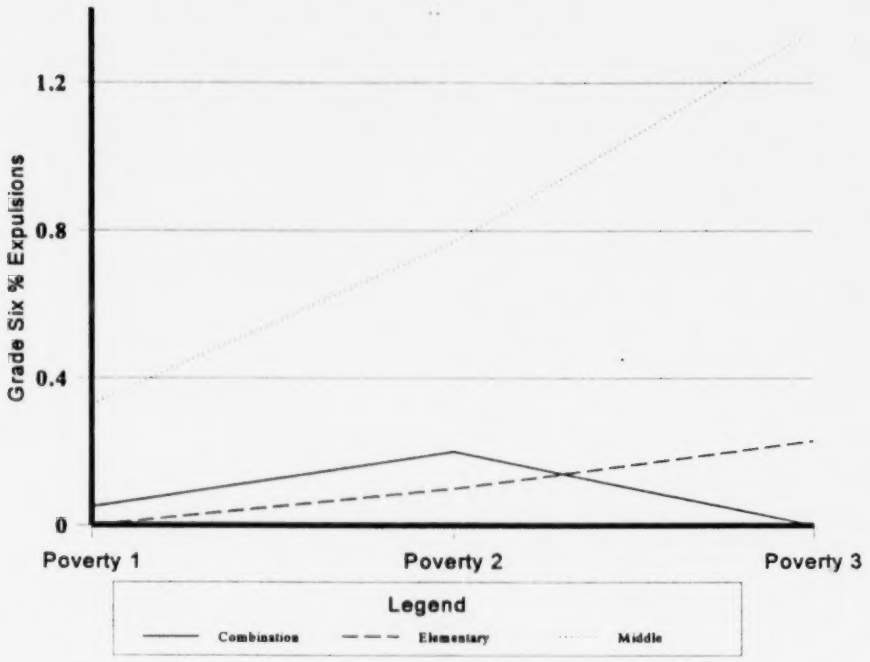

Figure 3. This graph shows the grade six interaction of school configuration and SES for the variable Percent Expulsions.

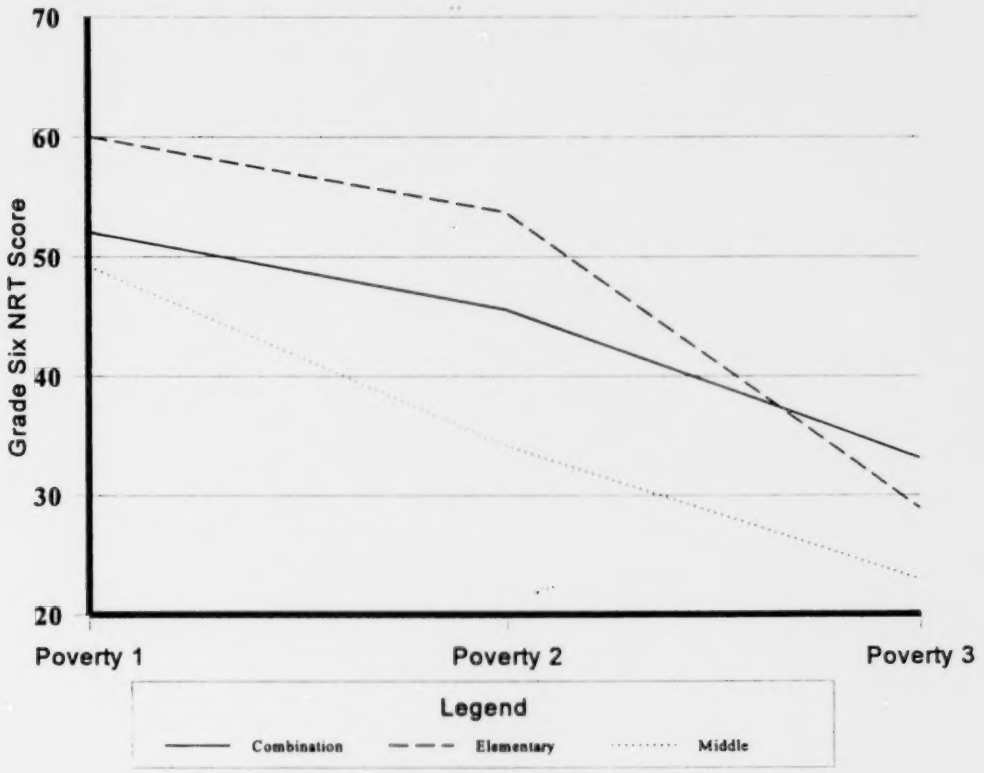

Figure 4. This graph shows the grade six interaction of school configuration and SES for the variable NRT Score.

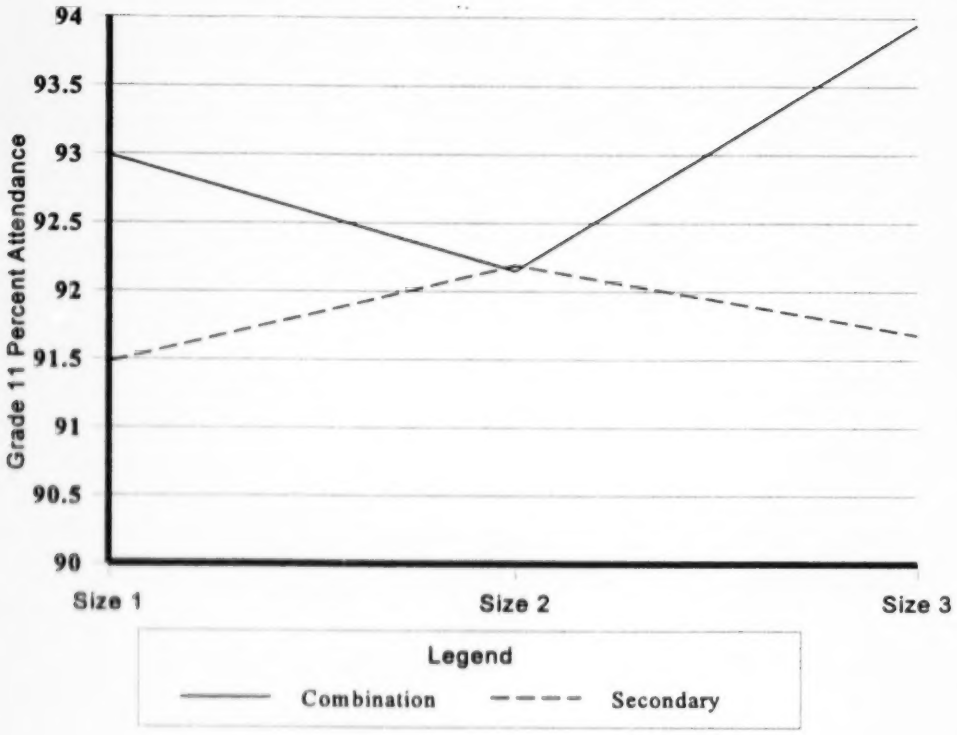

Figure 5. This graph shows the grade eleven interaction of school configuration and size for the variable Percent Attendance.

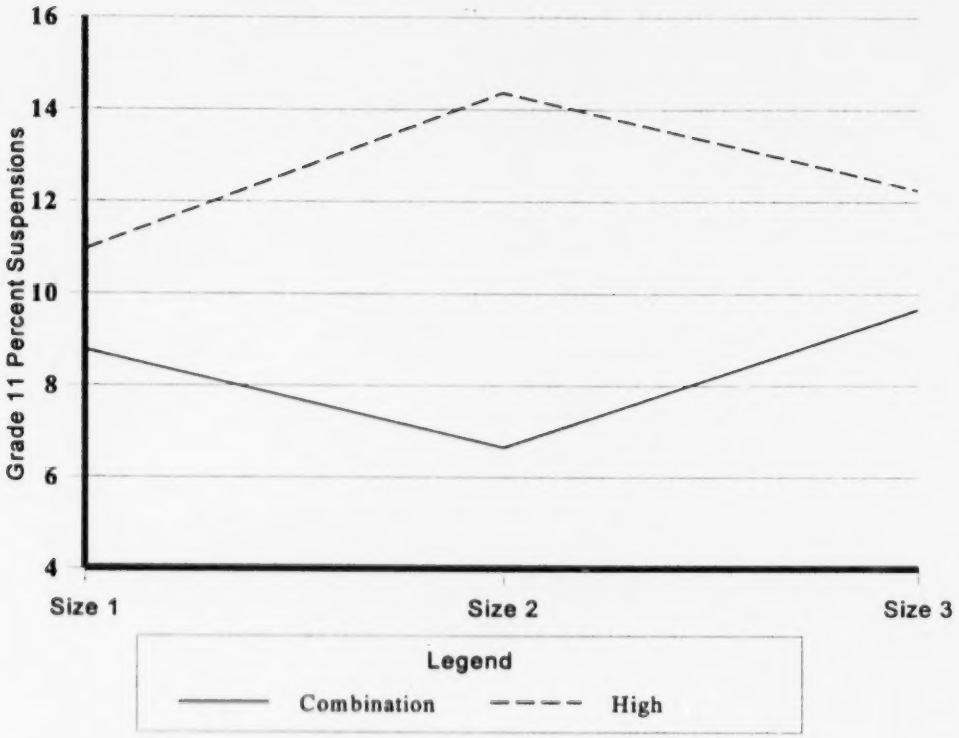

Figure 6. This graph shows the grade eleven interaction of school configuration and size for the variable Percent Suspensions.

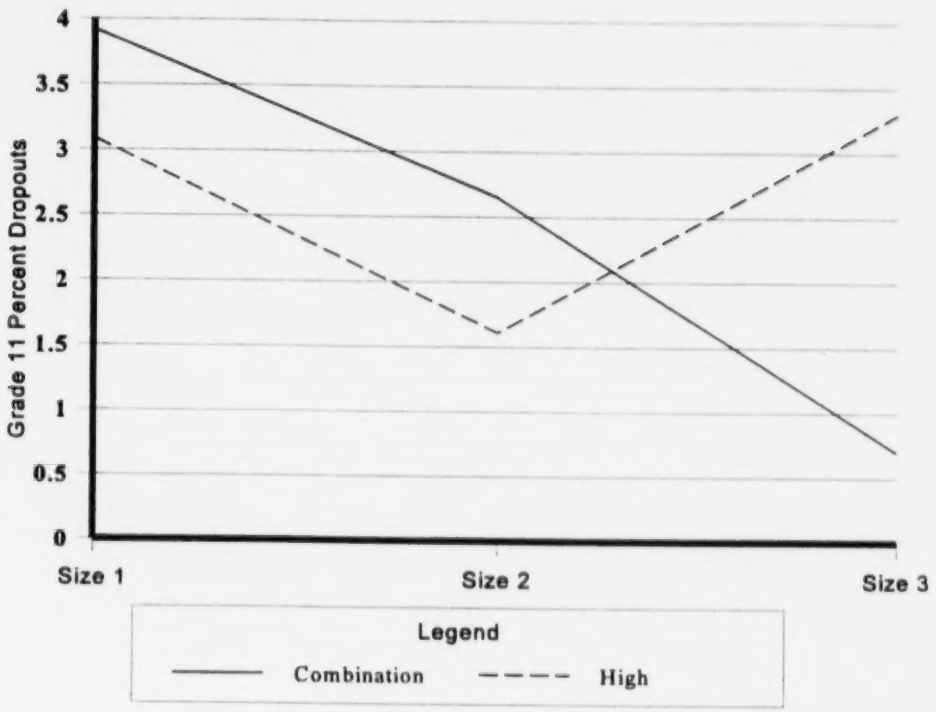

Figure 7. This graph shows the grade eleven interaction of school configuration and size for the variable Percent Dropouts.

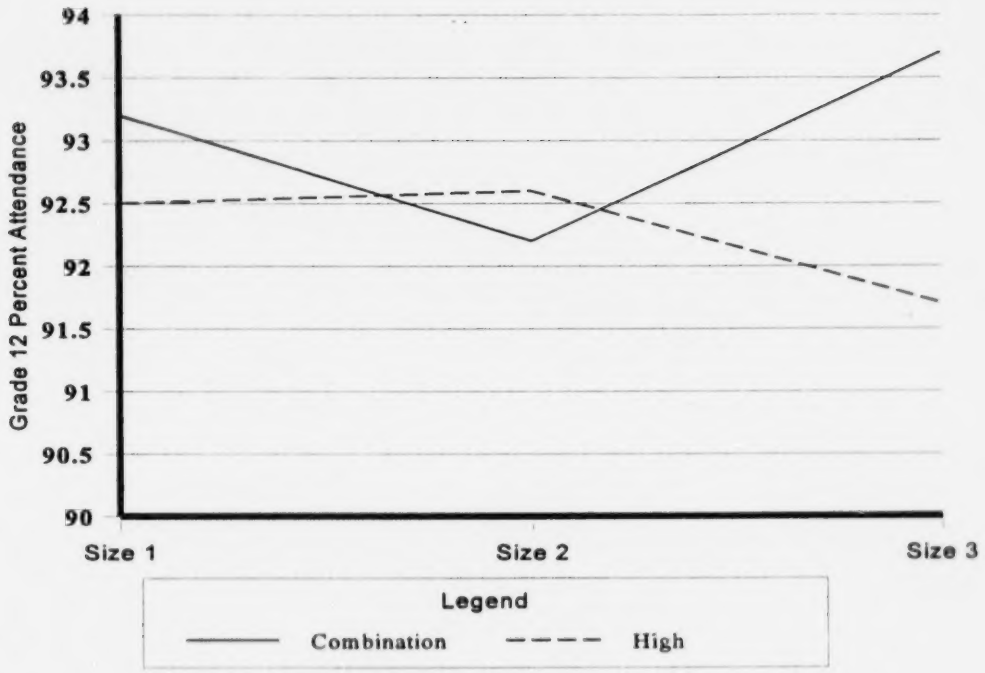

Figure 8. This graph shows the grade twelve interaction of school configuration and size for the variable Percent Attendance.

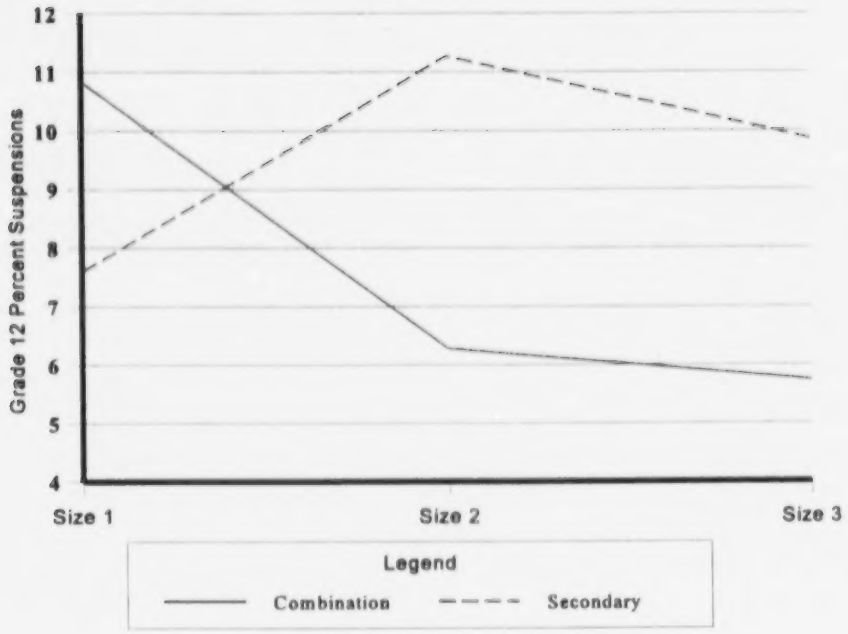

Figure 9. This graph shows the grade twelve interaction of school configuration and size for the variable Percent Suspensions.

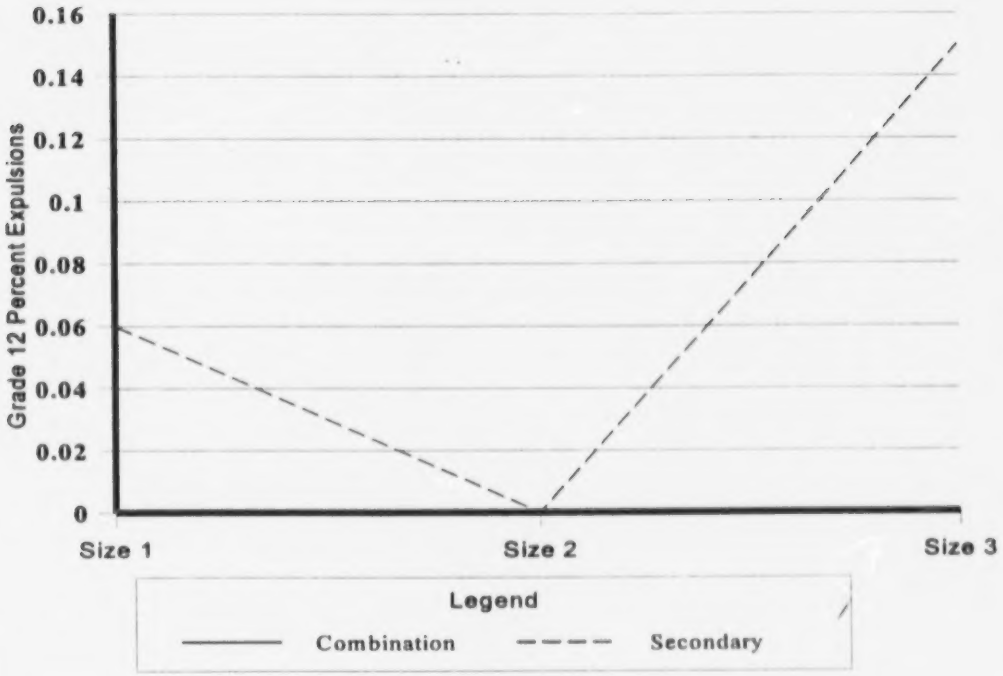

Figure 10. This graph shows the grade twelve interaction of school configuration and size for the variable Percent Expulsions. Please note that expulsions for all combination schools are zero.